

animals when necessary. The floor of the enclosure has a thick growth of grass interspersed with shady trees. The two males were released in this enclosure and were fed on 3kg of buffalo meat per day per animal except on Fridays. They were subsequently joined by a female received from the Indore Zoo on 28.10.1982 which eventually died on 16.12.1982. On 19.4.1983 one of the two males was returned to the Jaipur Zoo and a female was obtained on breeding loan on 24.3.1984 from the Mysore Zoo. They were seen to mate for three days on 10.12.1984, 11.12.1984 and 12.12.1984 and each mating lasted for about 14 minutes, 12 minutes and 10 minutes respectively. The female during the advance stages of pregnancy completely disappeared into a burrow dug up earlier by her. This burrow which had a single opening to begin with was supplemented with two more openings leading into a central chamber. The male was

removed earlier from the enclosure and kept in a cell separately. The female did not take meat given to her on 13.2.1985 and 14.2.1985, therefore it is presumed that she littered on 13.12.1985 after a gestation period of 63 days. The whelps were first sighted on 9.3.1985 when 4 cubs were seen. On 10.3.1985 5 cubs were seen. They still spent most of their time in the burrow and came out only for a short period in the morning and evening, the diet of the female consists of 3 kg. of buffalo calf meat, $\frac{1}{2}$ litre milk and one rabbit once a week.

Our data agrees with Prater's observation of wolf pups being produced in the spring or early summer in Himalayas unlike the main breeding season of wolves in India at the end of the monsoon and the cubs being born in December. The litter size of 5 cubs is within the usual reported range of three to nine in a litter.

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4. OBSERVATIONS ON THE RED FOX (*VULPES VULPES ARABICA*) IN THE AL AIN AREA, UNITED ARAB EMIRATES

INTRODUCTION

There is much Red Fox activity throughout the United Arab Emirates. They inhabit rocky mountainous regions or well watered urban and suburban areas. They appear, however, to be absent from the open sand dunes. There have been no previous studies of the parasites of this species in this country. Since December 1979 Red Foxes have been snared and shot in the zoo as a disease control policy. They

have also been responsible for a number of deaths of new-born mammals and waterfowl in the zoological collection. Fourteen of these foxes were autopsied, and the gastro-intestinal contents of thirteen were examined to establish as far as possible the diet, and estimate the potential danger to the zoo animals of incoming parasites carried by the foxes. The weights of some animals were noted, in order to compare with captive Red Foxes in the zoological collection.

METHODS

All foxes were caught using wire snares, and then shot dead. Autopsies were performed within twelve hours of death, often within one hour. Endoparasites visible to the naked eye were removed from the digestive tract, washed in distilled water, and preserved in methanol for identification. Contents of the stomachs were separated and identified as far as possible. The uteri of both vixens were opened for examination.

RESULTS

The gastro-intestinal contents of thirteen foxes were examined. Massive infestation with cestodes was found in eleven of the thirteen, present in the small intestine. This was identified as *Joyeuxiella echinorhyncoides* Sonsino 1889. In addition, Echinococcus-like cestodes were found in the caecum of one fox.

Nematodes were present in the caecum and colon of seven of the thirteen foxes. An unidentified *Trichuris* spp. was found in all seven, and *Oxynema crassispiculum* Sonsino 1889 was noted in two of these seven animals. Only two foxes out of the thirteen carried no visible endoparasites. One animal was found to have Ixodid ticks attached to the ears.

Of the thirteen animals in which the stomach contents were examined, eight had empty stomachs. Those with full stomachs contained hair, feather shafts, pigeon remains, maggot shells, several pieces of fat, a strip of goat skin, fish bones, and a half digested date complete with stone.

Both females were pregnant. One, killed on 9.1.1980, weighed 3.18 kgs and carried two embryos in the right cornu and one in the left. The second female, killed on 26.1.1980,

weighed 4.3 kgs and carried two fetuses in the left cornu and one in the right. Pregnancy was more advanced in the second animal.

DISCUSSION

The endoparasites of Red Foxes in Britain have been mentioned by Richards (1977). He recorded flukes, hookworms, and whipworms. Those found in this study indicate that *Trichuris* spp. may be carried by over half the foxes of this region, while *Oxynema crassispiculum* is harboured by a very few animals. *Joyeuxiella echinorhyncoides* appears to enjoy an endemic distribution among the foxes of this area.

The occurrence of the Echinococcus-like organisms is interesting, as the local Bedouin population may sometimes be affected with hydatidosis (M. Blake, pers. comm.). Camels may carry large hydatid cysts, and camel meat is often eaten. Dead camels may be left in the desert, rather than being burned or buried, where wild foxes may reach them. The Red Fox, therefore, may possibly play a role in the life-cycle of this parasite locally.

Ixodid ticks have been found on British foxes by Harris (1978), who recorded *Ixodes hexagonus* and *Ixodes canisuga*. Ticks do not appear to be a major problems for Red Foxes in this area, with only one fox infested. It is not known whether these ticks are involved in transferring blood parasites.

The variety of stomach contents found gives an idea of the diversity of the diet of this species. Richards (1977) made an extensive study of the diet of this animal in Devon, Britain, and listed mammals, birds, reptiles, fruit and insects as the chief items of consumption, in addition to carrion. Burrows (1968), quoted by Richards, states the Red

Fox may kill hedgehogs. Johnson (1980) has even recorded Red Fox catching fish, in Scotland. Harrison (1968) indicates foxes in Lebanon feed on figs, grapes, other fruit, insects, and small vertebrates. The findings here confirm the Red Fox is as much a scavenger as a predator, the maggot shells and fish bones almost certainly coming from a local garbage dump frequented by dogs, cats, and foxes (personal observation). Fruit may be consumed when available. The data here is not sufficient to deduce whether certain items of food are consumed preferentially on a seasonal basis. Live prey in this area includes birds (mainly pigeons and doves), rats, desert rodents, reptiles (both lizards and snakes), and insects. Captive Fennec foxes in the zoological collection readily eat locusts, which are caught locally from the desert.

The breeding season for this species has been stated by Harrison (1968) to occur during December and January, with parturition in March or April. The results here confirm these observations. Another local canid also breeding in winter is the Arabian Wolf (*Canis lupus arabs*).

The weights of those Red Foxes listed in Table 1 appear to be the first such measure-

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TABLE 1

Sex	Weight (kgs).
M	3.6
M	3.86
M	3.18
F	3.18
M	3.72
F	4.3
M	3.54
M	3.425
M	3.6
M	2.35

ments of *Vulpes vulpes arabica* using freshly killed animals. The degree of parasitism did not affect the body weight, there being heavily infested animals weighing both more and less than lightly infested animals. The heaviest fox was the pregnant vixen shot in an advanced state of pregnancy, and the lightest was a juvenile male, weighing 2.35 kgs. The average weight for a male was 3.40 kgs, with a range of 2.35 to 3.86 kgs.

ACKNOWLEDGEMENTS

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5. POSSIBLE PLAY BETWEEN THE INDIAN GIANT SQUIRREL (*RATUFA INDICA INDICA*) AND THE COMMON LANGUR (*PRESBYTIS ENTELLUS*)

A behavioural sequence that may be interpreted as play was observed between a juvenile (one-year old) female *Ratufa indica indica* and a male Common Langur *Presbytis entellus*. This was recorded at the Yellapur Reserve Forest, North Kanara District, Karnataka.

At 2.16 p.m. on the 30th of March 1985, the female squirrel rested 2 feet from the male langur who was sitting erect apparently also resting in an *Olea dioica* tree. At 2.17 p.m. the squirrel moved about a foot further away and rested horizontally on the same branch. At 2.18 p.m., she approached the langur and then moved away to feed on the *Olea* fruit nearby. At 2.23 p.m. the langur approached the female and cuffed her gently on the head. She slid beneath the branch; then nearing the

langur appeared to initiate play by jerking her body. They indulged in a small chase in adjacent branches. The squirrel moved away and continued feeding while the langur adopted the same resting posture as before. The whole sequence lasted for a minute. At 2.27 p.m., the langur left the tree to join other members of the troop. There did not appear to be any aggression during the sequence. Neither of the participants vocalised during this interaction.

Olea dioica (Oleaceae) is one of the commonest middle storied tree in this forest and several individuals were fruiting profusely in the area at that time. Therefore it is unlikely that the sequence originated due to competition for the fruit source. It seems possible that interspecific play did occur in this case.

T-4/24-1 MAGOD COLONY,
TALUKA YELLAPUR,
DIST. NORTH KANARA,
KARNATAKA-581 371,
April 15, 1985.

RENEE BORGES

6. AN INSTANCE OF PREDATION OF GREY QUAIL BY THE INDIAN GERBILLE

The Indian Gerbille *Tatera indica* (Hardwicke) is found throughout India and mostly inhabit dry and sandy soils. Its food consists mainly of grains, roots, leaves and grass. According to Prater (1971) it also eats in-

sects and their grubs, the eggs and nestlings of ground birds and quite probably kills and eats smaller rodents.

On 1 February, 1985, wonder traps were closed at about 1700 hr after three days of